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**ENVIRONMENTAL ASSESSMENT  
LAKE METALS/PIONEER REFINING SITE  
SALT LAKE CITY, UT**

**SCANNED**

**DERR - 2005 - 000462**

**Prepared by:**

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**1076-41C**

**MAY 4, 2005**



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May 6, 2005  
1076-01cEA

SUBJECT: Environmental Assessment  
Lake Metals/Pioneer Refining  
1520 Pioneer Road  
Salt Lake City, Utah

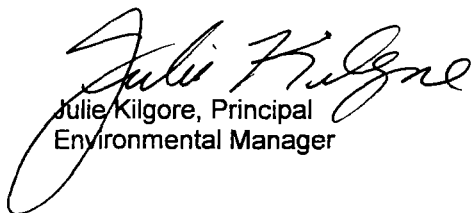
Wasatch has prepared this Environmental Assessment as part of the Voluntary Cleanup Program (VCP) application being submitted to the Utah Division of Environmental Response and Remediation for the above referenced site.

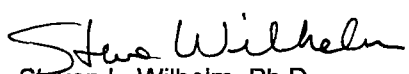
We have also included the required \$2,000 deposit and VCP application form on behalf of Midway Holding Company (formerly Pioneer Refining Services).

Should you have any questions, please do not hesitate to contact us.

Sincerely,

WASATCH ENVIRONMENTAL, INC.

  
Julie Kilgore, Principal  
Environmental Manager

  
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Senior Remediation Scientist

Distribution: (1) Addressee  
(1) Midway Holding Company, Mr. Mike Mackay

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Attachments

- 1) Legal Description - Pioneer Road Property
- 2) Legal Description - Andrews Avenue Properties
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# ENVIRONMENTAL ASSESSMENT

## Lake Metals Site Salt Lake City, Utah

### 1.0 LEGAL DESCRIPTION OF THE SITE

The Lake Metals site consists of two parcels of property, totaling almost three acres, located in Salt Lake City, Salt Lake County, Utah. It lies within the boundaries of the Historic Utah Ordnance Plant (UOP) site (CERCLIS ID# UT0001307743). The UOP manufactured .30 and .50 caliber ammunition for the U.S. Army stationed along the Pacific Coast during World War II. The northern parcel is located at 1520 South Pioneer Road and the southern parcel is located at 2790 West (formerly 2350 West) Andrew Avenue. A railroad spur divides the northern and southern parcels (Figure 1).

The site is located in Section 16, T1S, R1W, Salt Lake Base Meridian (USGS, 1963). The general geographic coordinates are 40° 44' 10" North Latitude and 111° 57' 30" West Longitude. The legal descriptions of the parcels are attached to this Environmental Assessment.

### 2.0 PHYSICAL CHARACTERISTICS OF THE SITE

#### 2.1 Site Setting

The site is surrounded by a six-foot high chain link fence. Three brick buildings are located on the southern parcel. The construction dates of these buildings are unknown; however, the buildings were part of the UOP activities. On the southern parcel, asphalt and concrete surround the two easternmost buildings, and gravel and soil surround the westernmost building. Two masonry block buildings are located on the northern parcel. The southernmost of these two buildings was built in 1958 and extended in the 1970s. The other masonry block building was built in the early 1980s.

The site is located in an area of mixed commercial and industrial use. Asphalt Systems, Inc., currently borders the site west of the northern parcel and north of the southern parcel. Wasatch Abrasive/Powder Tech Powder Coating currently borders the site on the west.

Industrial Battery Supply, B&T Masonry, Inc., and a large vehicle and equipment parking lot currently border the site on the south (across Andrew Avenue). DoAll Timesaver Industries, Delta Firesystems, Trans West Industrial Supply, and Conesco Concrete Supply currently border the site on the east (across Pioneer Road). Highland Transportation, Inc., currently borders the site on the north.

#### 2.2 Geology

The geology and soil conditions at the site are determined by its location in the Salt Lake Valley, which lies between the Wasatch Mountains to the east, the Oquirrh Mountains to the west, and the Traverse Mountains to the south. Basin-fill deposits were eroded from these adjacent mountain ranges and deposited in the Salt Lake and local valleys. The general stratigraphy of the area is characterized by several hundred feet of unconsolidated to poorly consolidated alluvial and lacustrine deposits (Hintze, 1988). These interbedded and highly lenticular sands, silty sands, silts, and clays of the Salt Lake Formation are estimated to be more than 500 feet thick. Mountain streams deposited most of the sediments into the basins of ancient Lake Bonneville. The fine-grained sediments were deposited in the deeper portions of Lake Bonneville while the coarser-grained sediments were deposited along the margins of Lake Bonneville as its water level fluctuated and eventually receded to its present level (Hely et al., 1971).

A soil survey of the Salt Lake area conducted in 1974 identified the soils at the Lake Metals site as primarily of the Decker-Lasil-Terminal associated soils, which are found on lake plains near the Great Salt Lake (Woodward et al., 1974). This soil profile is somewhat poorly drained, moderate saline-alkaline soils, while surface runoff is slow. Vegetation includes salt grass, greasewood, annual weeds, and grasses.

### **2.3 Hydrology**

The Salt Lake Valley is located in the Great Basin drainage system, which is a closed system with no outlets. The Jordan River and its tributaries form the main drainage for the Salt Lake Valley and discharge into the Great Salt Lake (Hely et al., 1971). The Jordan River is a class 3C stream (seasonally flooded, upper perennial, riverine), is located approximately 1.8 miles east of the site, and has a flow rate of approximately 300-600 cubic feet per second (cfs). The discharge point for the Jordan River into the Great Salt Lake is characterized by freshwater marshes within the confines of the Farmington Bay Waterfowl Management Area (FBWMA). The Jordan River is not used as a drinking water source.

Other watercourses located in the general location of the Lake Metals site are the Brighton Canal, Surplus Canal, and Lee Drain. The Surplus Canal is located approximately 1.1 miles east of the site and discharges into the Great Salt Lake approximately 5.8 miles downstream from the site. Brighton Canal is located approximately 0.7 miles west of the site and discharges into the Great Salt Lake approximately 8.9 miles downstream from the site. Lee Drain is the nearest watercourse and is located south of the site. The discharge point for Lee Drain into the Great Salt Lake is approximately 9.1 miles downstream from the site. The discharge points for Lee Drain and the Surplus and Brighton Canals into the Great Salt Lake are characterized by freshwater marshes within the confines of the FBWMA (DERR, 1997).

### **2.4 Hydrogeology**

The site is located within the Salt Lake Valley, a fault-bounded Basin and Range graben encompassing approximately 500 square miles. The hydrogeology of the Salt Lake Valley is generally accepted to have a shallow, unconfined aquifer, underlain by a confining layer of lacustrine clay. Beneath this confining layer is a confined aquifer system or principal aquifer, which is the primary water supply aquifer (Hely et al., 1971). The general groundwater flow in the Salt Lake Valley is from the mountain fronts toward the Jordan River and subsequently to the northwest toward the Great Salt Lake (Anderson et al., 1994).

Locally, the groundwater flow direction may be influenced by a sewer line, highway, local watercourse, etc. The shallow portion of the aquifer may discharge into surface watercourses such as the Jordan River and Brighton and Surplus Canals (Waddell et al., 1987; Hely et al., 1971).

The shallow, unconfined aquifer is composed principally of clay, silt, and fine sand. In some parts of the Salt Lake Valley, this aquifer has permeability only slightly greater than that of the underlying confining bed. The extent of the shallow aquifer is smaller than the confined aquifer, and is underlain everywhere by the confined aquifer (Hely et al., 1971). The shallow, unconfined aquifer is recharged by leakage upward from the confined aquifer in areas where the potentiometric surface of the confined aquifer is above the confining bed. Recharge also occurs from infiltration of precipitation, canals, irrigated lands, and streams (Waddell et al., 1987). In some parts of the Salt Lake Valley, water is less than 10 feet below ground surface (bgs). The shallow aquifer is approximately 50 feet thick and has seldom been used as a drinking water source because it yields water slowly, is of poor chemical quality (calcareous and saline-alkali), and higher quality sources are readily available (Waddell et al., 1987).

The confined aquifer consists of Quarternary deposits of clay, silt, sand, and gravel, all hydraulically interconnected (Hely et al., 1971). The confined aquifer is overlain by relatively impermeable deposits of clay, silt, and fine sand, which act as a confining bed that ranges in thickness from about 40 to 100 feet (Waddell et al., 1987). The confined aquifer becomes unconfined near the mountain front and it is in this area where the aquifer receives its primary recharge (Marine et al., 1964). Recharge also comes from infiltration of water from streams and

canals, unconsumed irrigation water, and from precipitation on the valley floor (Thiros, 1995). Beneath the deeper aquifer is a semi-consolidated to consolidated bedrock of Tertiary and pre-Tertiary age. The overall thickness of the aquifer system ranges up to 1,500 feet (Hely et al., 1971).

During previous investigations conducted on the site, groundwater was encountered between 4.48 to 6.55 feet bgs. The apparent groundwater flow direction at the site is to the southeast at a gradient of 0.02 foot/foot (Metric, 2004). During the Utah DEQ Innovative Assessment sampling event, groundwater was encountered at approximately 10 feet bgs. It was also noted during the sampling event, that a waterline located near the northwest corner of the site had been broken for some time and was leaking (DERR, 2004a).

## **2.5 Meteorology**

The site is located in a semi-arid continental climate (Eubank, 1979). The winters are fairly cold, with temperatures averaging below 32 degrees Fahrenheit (°F) and summers averaging about 77 °F (Brough, 1987). The average annual precipitation ranges from 13 to 17 inches (Woodward et al., 1974). The average annual snowfall ranges from 60 to 70 inches, with an average annual depth of 9 to 13 inches and an average duration of continuous snow cover of 29 days (Eubank, 1979). The frost-free period is 130 to 190 days (Woodward et al., 1974). The winds are predominantly from the southwest with a mean speed of 4 to 5 miles per hour. The next most common wind direction is from the north and northwest (Ashcroft, 1992; Brough, 1987).

## **3.0 OPERATIONAL HISTORY OF THE SITE**

### **3.1 Site History**

The site is located within the boundaries of the UOP (Figure 1). According to historic maps, the area in which the site is located was identified as the "Hazardous Area Buildings" and the site was identified as the "Chemical Stores Group." The three brick buildings on the southern parcel were identified as Buildings 25, 26, and 27 (Figure 1). Building 25 was identified as "magnesium storage building," Building 26 was identified as "nitrate chlorate & peroxide storage," and Building 27 was identified as "chemical storage".

In 1958 the Mackay family purchased the site. At the time of the purchase, the only buildings that existed on-site were the three brick buildings and a wooden building then located on the southern parcel; the northern parcel was vacant. In 1958 the southern building was built on the northern parcel as a non-ferrous metal recycling facility to produce brass and bronze alloys. The northern building was built on the north parcel in the early 1980s. In the 1970s the recycling process was adapted to silver refining, for silver recovered from the photographic industry. According to the Salt Lake City Polk Directories, Pioneer Refining is identified on the northern parcel in 1990, preceded by Mackay Smelter from 1965 to 1985, and Lake Metals in 1960 (Wasatch, 2000, 2004). Currently, Mackay Family Limited Partnership owns the northern parcel and Pioneer Refining Services, Inc., owns the southern parcel. Academy Corporation located in Albuquerque, New Mexico, is currently leasing and operating the Pioneer Refining Facility (Pioneer).

### **3.2 Current Operations**

Of the three UOP brick buildings, the easternmost is utilized for the assembly of silver reclamation equipment. The other two UOP buildings are utilized for storage, offices, and packaging supplies for the assembly of the silver reclamation equipment. A small metals analysis laboratory that utilizes nitric acid to determine silver fines is located in the central building. A wooden building built upon pylons was located between the two westernmost buildings; it was removed in 1996. (See Figure 1; the wooden building's approximate location and dimensions are shown as a dotted line.) The section of the railroad spur located north of the two east buildings has been abandoned and almost entirely covered with concrete. The remainder of the spur has been leased to and is used by Asphalt Systems, Inc., (DERR 2004; Wasatch, 2000; Appendix A).

Two principal buildings occupy the northern parcel. The southern building is a masonry-block building with a steel-frame extension on the west side. The east end of the building is utilized for office space and the west end of the building houses the refining furnaces. Two bag-houses associated with the refining furnaces are located west of the building. The northern building is a masonry-block building with a steel-frame extended roof on its west side. The east end of the building is used for receiving material, draining and containerizing solutions, preparing refining materials to be refined, and for miscellaneous storage.

The west end of the building houses a warehouse and maintenance shop primarily used to re-line the refining furnaces. Three additional refining furnaces are located under the steel roof and a bag-house is located west of the building. In addition to these buildings, a number of smaller sheds and storage areas are located on the northern parcel. The majority of the northern parcel has been paved. Exposed soil is located on the western, northern, and eastern sides of the north building (Figure 2.)

Pioneer receives silver-bearing materials from photographic processes in the following forms: electrolytic flake, metallic replacement cartridges, organic resin beads, photographic film, and small amounts of photographic film ends. The first four types of material are run through a natural gas-fired refining process. The refining process generates three products: silver bullion, silver-bearing slag, and silver-bearing bag-house dust. The silver bullion is sold in the bullion market, the silver bearing slag is sold to a low-grade smelter for further refining, and the bag-house dust is shipped to another processor for final silver extraction (Wasatch, 2004).

#### **4.0 NATURE AND EXTENT OF CONTAMINATION OR RELEASE**

##### **4.1 Site Investigations**

###### **4.1.1 Pioneer Refining**

Pioneer is identified as a Resource Conservation and Recovery facility. In 1985 the Utah Bureau of Solid and Hazardous Waste (UBSHW) was requested by Mr. Mike Mackay to conduct an inspection of the B. R. Mackay and Son Facility to determine if the redefinition of solid waste or recycling amendments affected their operation. A letter was sent to Mr. Mackay from UBSHW indicating that the operation qualified for exemption under the Utah Hazardous Waste Management Regulation. Action items included an EP toxicity test of the slag material and a determination of whether raw materials used by the facility were hazardous waste that must be manifested (Wasatch, 2004).

###### **4.1.2 Utah Ordnance Plant Investigation**

In the spring of 2000 the Utah Department of Environmental Quality/Division of Environmental Response and Remediation (DERR) collected groundwater, surface water, sediment, and soil samples from the UOP site as part of an expanded site inspection. Samples were analyzed for semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), total metals (metals), pesticides/polychlorinated biphenyls (PCBs), explosives, and perchlorate. Earlier that year, the DERR contacted Pioneer management, requesting access to sample the site. Pioneer management elected not to grant the DERR access to the property. A groundwater sample (UOP-GW-24) and a composite soil sample (UOP-SO-27) were collected in the vicinity of the former "Chemical Stores Group" along Andrew Avenue (DERR, 2001). Samples UOP-GW-24 and UOP-SO-27 were compared to background samples UOP-GW-01 and UOP-SO-01.

Groundwater sample UOP-GW-24 was collected from the shallow aquifer between 5 to 20 feet bgs. According to the UOP Expanded Site Inspection Analytical Results Report (ESI) (DERR 2001), "Based on laboratory results, seventeen groundwater samples exceeded the background criteria (three times background or SQL for groundwater sample UOP-GW-01).

All twenty-four groundwater samples exceeded at least one Superfund Chemical Data Matrix (SCDM) benchmark value. Groundwater sample UOP-GW-24 was collected south of the former UOP Chemical Stores Group. Five analytes in this sample indicated the presence of an observed release: cobalt (349 micrograms per liter ( $\mu\text{g/L}$ )), copper (1,910  $\mu\text{g/L}$ ), lead (2,180  $\mu\text{g/L}$ ), nickel (1,110  $\mu\text{g/L}$ ), and silver (2.0  $\mu\text{g/L}$ ) (DERR, 2001).

Soil sample UOP-SO-27 was a composite soil sample collected from 1 to 3 feet bgs. According to the UOP ESI, "Several analytes in soil sample UOP-SO-27 were well above the background criteria... The analytes that qualified as observed releases included cadmium (1.7 milligram per kilogram ( $\text{mg/kg}$ )), copper (108  $\text{mg/kg}$ ), lead (2,190  $\text{mg/kg}$ ), silver (0.47  $\text{mg/kg}$ ), thallium (2.4  $\text{mg/kg}$ ), and zinc (886  $\text{mg/kg}$ ). In conclusion the ESI stated, "Based on laboratory results from the ESI, three areas had analyte concentrations that were well above the background criteria: soil and groundwater in the vicinity of the former UOP ballistics building, soil south of the former UOP Chemical Stores Group, and sediments downgradient of the former UOP Hazardous Area... soil south of the former UOP Chemical Stores Group, and sediment downgradient of the former UOP Hazardous Area contained elevated inorganic constituents." (DERR, 2001). Based on the analytical data, a letter was sent to EPA from the DERR in March 2001, recommending that further investigation of the UOP site be conducted. EPA concurred and issued an EPA Site Inspection Prioritization Decision sheet in May 2001, recommending further assessment of the UOP site (DERR, 2001; Wasatch, 2004).

#### **4.1.3 Metric Corporation Investigation**

In January 2004, Metric Corporation, on behalf of Academy Corporation, conducted a study of the site in anticipation of the purchase of the Pioneer Refining Facility. Metric collected 3 groundwater samples and 23 soil samples. Groundwater samples were collected at the groundwater surface and were analyzed for metals, explosives, and perchlorate. Soil samples were a composite of the upper one-foot of soil, except for soil sample PW-3-10. Sample PW-3-10 was collected at a depth of 10 feet at monitoring well PW-3 because the soil from 3 to 10 feet was stained black. Soil samples were analyzed for metals.

Figure 3 shows the sampling points and lists the results for each sample for those analytes the Utah DEQ listed as analytes of concern in the Innovative Assessment (DERR 2005) (see section 4.1.4).

Lead in groundwater sample PW-1 (0.14  $\text{mg/L}$ ) exceeded the screening level, the EPA maximum contaminant level (MCL), the Utah Drinking Water Standards, and the UOP background level. Arsenic in groundwater samples PW-2 (0.38  $\text{mg/L}$ ) and PW-3 (0.25  $\text{mg/L}$ ) exceeded the screening level, the MCL, and the Utah Drinking Water Standards, but did not exceed UOP background levels. No explosives or perchlorate were detected in the groundwater (Metric, 2004).

Soil results indicated that 18 of the 23 soil samples either exceeded UOP background levels or EPA Preliminary Remediation Goals for Industrial Soils for some type of metal. Soil sample PS-5 exhibited the highest concentration for lead (5,600  $\text{mg/kg}$ ) and soil sample PS-3 exhibited the highest concentration for arsenic (37  $\text{mg/kg}$ ).

#### **4.1.4 Utah DEQ Innovative Assessment**

On August 23 and 24, 2004, the DERR collected seventeen surface soil, eight subsurface soil, and eight groundwater samples as part of an Innovative Assessment of the site (DERR 2005). The samples were analyzed for SVOCs, VOCs, metals, pesticides/PCBs, explosives, and perchlorate.



Utah DEQ determined that five contaminants identified at the site were analytes of concern. Analytes of concern in groundwater, with maximum concentrations shown in parentheses, were arsenic (781 µg/L) and lead (358 µg/L). Analytes of concern in soil were arsenic (675 µg/L), lead (2,900 mg/kg), mercury (28.5 mg/kg), perchlorate (23.9 µg/L), and PCBs (370 mg/kg). Based on the laboratory results, the northern parcel exhibited the highest levels of groundwater and soil contamination; except for arsenic in groundwater sample LM-GW-06.

#### **4.1.4.1 Groundwater Results**

Eight groundwater samples (including background sample LM-GW-01 collected offsite) were collected with a Geo-probe®, peristaltic pump, and inert tubing, from eight separate boreholes from the depth at which groundwater was first encountered (approximately 10 feet bgs). Based on the analytical results, an observed release was identified in two groundwater samples analyzed for SVOCs, three groundwater samples analyzed for VOCs, seven groundwater samples analyzed for metals, and two groundwater samples analyzed for pesticides/PCBs. There were no observed releases in groundwater samples analyzed for explosives or perchlorate. Analytical results identified analytes that exceeded SCDM benchmark screening values and MCLs.

Figure 4 shows the sampling points and lists the results for each sample for the analytes of concern.

#### **4.1.4.2 Surface Soil Results**

Seventeen surface soil samples (including background sample LM-SS-01 collected offsite) were collected from a depth of 0 to 4 inches bgs. Based on the analytical results, observed contamination was identified in 13 surface soil samples analyzed for SVOCs, 7 surface soil samples analyzed for VOCs, 14 surface soil samples analyzed for metals, 13 surface soil samples analyzed for pesticides/PCBs, and 1 surface soil sample analyzed for perchlorate. There was no observed contamination in surface soil samples analyzed for explosives. Analytical results identified analytes that exceeded SCDM benchmark screening values.

Figure 4 shows the sampling points and lists the results for each sample for the analytes of concern.

#### **4.1.4.3 Subsurface Soil Results**

Eight subsurface soil samples (including background sample LM-SB-01 collected offsite) were collected from a depth of 4 to 18 inches bgs. Based on the analytical results, observed contamination was identified in six subsurface soil samples analyzed for SVOCs, two subsurface soil samples analyzed for VOCs, six subsurface soil samples analyzed for metals, five subsurface soil samples analyzed for pesticides/PCBs, and two subsurface soil samples analyzed for perchlorate. There was no observed contamination in subsurface soil samples analyzed for explosives. Analytical results identified analytes that exceeded SCDM benchmark screening values.

Figure 4 shows the sampling points and lists the results for each sample for the analytes of concern.

### **4.2 Nature and Extent of Contamination or Release**

The DERR Innovative Assessment (DERR 2005) listed two analytes of concern in groundwater (lead and arsenic) and five analytes of concern in soil (lead, arsenic, mercury, PCBs, and perchlorate). Table 1 lists the seven analytes of concern, along with the maximum concentrations detected in the Metric study or the Innovative Assessment, the UOP background level, and the EPA Region IX Preliminary Remediation Goal (PRG) and the EPA Region VI Medium-Specific Screening Level.

#### **4.2.1 Lead in Groundwater**

Lead contamination in the shallow aquifer is general in the west Salt Lake City area. The background contamination level determined in the ESI was 0.0047 mg/L. One ESI sample, UOP-GW-24, was collected south of the former UOP Chemical Stores Group and indicated the presence of lead (2.18 mg/L). Of the ten groundwater samples collected during the Metric study and the Innovative Assessment, all but two samples (PW-2 and PW-3) contained detectable levels of lead above the background level determined in the ESI. (See Figures 3 and 4.)

#### **4.2.2 Arsenic in Groundwater**

Arsenic contamination in the shallow aquifer is general in the west Salt Lake City area. The background contamination level determined in the ESI was 0.13 mg/L. The ESI sample UOP-GW-24, collected south of the former UOP Chemical Stores Group, did not indicate the presence of arsenic. Of the ten groundwater samples collected during the Metric study and the Innovative Assessment, all but one sample (PW-1) indicated detectable levels of lead, and five exceeded the background level determined in the ESI. (See Figures 3 & 4.)

#### **4.2.3 Lead in Soil**

The Metric Corporation study and the DERR Innovative Assessment included a total of 47 soil samples. With one exception, in both the Metric Corporation study and the Innovative Assessment, elevated levels of lead were detected only in the unpaved areas (or effectively unpaved area, in the case of samples SS-12 and SB-12) of the northern parcel. (The exception was sample PS-4 of the Metric study, which was taken in a concrete paved area on the east side of the northern parcel and which contained 220 mg/kg of lead, while sample SS-04 of the Innovative Assessment, taken in essentially the same location, contained 5.5 mg/kg of lead.) The Metric study detected elevated lead levels only in the northern areas of the northern parcel, while the Innovative Assessment detected elevated lead more generally in the unpaved areas of the northern parcel.

Of the 47 soil samples in the two studies, nine samples (PS-5, SS-03, SS-10, SS-11, SS-12, SB-12, SS-13, SS-16, and SS-17) contained lead above the EPA Region IX Preliminary Remediation Goal (PRG) for lead (800 mg/kg) and the EPA Region VI Medium-Specific Screening Level for lead (800 mg/kg). All nine samples with lead levels above 800 mg/kg were taken in the unpaved (or effectively unpaved) areas of the northern parcel. (See Figure 4.)

#### **4.2.4 Arsenic in Soil**

Arsenic is a natural constituent in the surface and subsurface soils in Salt Lake City. Background levels for surface and subsurface soils were determined in the Utah Ordnance Plant Investigation. The surface background level was 10.8 mg/kg, and the subsurface background level was 28.1 mg/kg.

Of the 47 soil samples collected in the two studies, sixteen (PS-2, PS-3, PS-5, SS-03, SS-06, SS-08, SS-10, SS-11, SS-12, SB-12, SS-13, SB-13, SS-15, SS-16, SB-16, and SS-17) were above the EPA Region IX Preliminary Remediation Goal for arsenic (16 mg/kg). All sixteen that were above the PRG for arsenic were collected in unpaved areas. (See Figures 3 and 4.)

#### **4.2.5 Mercury in Soil**

Of the one soil sample collected during the ESI and the 47 soil samples collected during the Metric study and the Innovative Assessment, only two samples exceeded the screening criteria for mercury. From the Innovative Assessment, samples SS-12 (28.5 mg/kg) and SB-12 (78 mg/kg) exceeded the SCDM reference dose screening level (23 mg/kg). Thus, the only indications of mercury contamination above a screening level were in soil samples taken in an effectively unpaved area on the northern parcel. (See Figure 4.)

None of the soil samples collected in any of the studies exceeded the EPA Region IX Preliminary Remediation Goal for mercury (310 mg/kg) or the EPA Region VI Medium-Specific Screening Level for an outside Industrial Worker (340 mg/kg).

#### **4.2.6 PCBs in Soil**

During the DERR Innovative Assessment, PCB contamination was observed in eight out of sixteen surface (0" - 4") soil samples and in five out of sixteen subsurface (4" - 18") soil samples. (See Figure 4.) With one exception, all of the PCB contamination above a screening level was observed in samples taken from unpaved areas of the site (surface: SS-02, SS-03, SS-10, SS-11, SS-12, SS-13, SS-16, SS-17; subsurface: SB-03, SB-10, SB-12, SB-13, SB-16). (Samples SS-12 and SB-12 were collected in an area of broken concrete that, for purposes of protecting underlying soil from infiltration, is effectively unpaved.) Only one soil sample from a paved area contained detectable PCB contamination above a screening value (SS-04, 0.73 mg/kg). (See Figure 4.)

#### **4.2.7 Perchlorate in Soil**

Of the 24 soil samples collected during the DERR Innovative Assessment, three contained perchlorate at detectable levels: SS-13 (0.0178 mg/kg), SB-13 (0.202 mg/kg), and SB-16 (0.0239 mg/kg). None of the samples contained perchlorate above the screening level of 7.8 mg/kg, or above the EPA Region IX Preliminary Remediation Goal for perchlorate (100 mg/kg) or the EPA Region VI Medium-Specific Screening Level for an outside Industrial Worker (110 mg/kg). (See Figure 4.)

### **5.0 POTENTIAL FOR HUMAN AND ENVIRONMENTAL EXPOSURE**

Potential for human exposure to the analytes of concern is limited to onsite workers. There is no known use of the groundwater, and the entire site is surrounded by a 6-foot high fence.

Potential for environmental exposure to the contamination at the site is limited to birds or other organisms that could reach the unpaved areas inside the fence, and transport of the contaminants to the groundwater by infiltration through the unpaved areas.

### **6.0 REFERENCES**

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PIONEER ROAD PROPERTY

**Exhibit A Property Description**

1520 South Pioneer Road, located in the County of Salt Lake, State of Utah, and more particularly described as follows:

Beginning at a point in the West line of Pioneer Road, said point being located 1678.83 feet North 0°03'08" West and 25.0 feet South 89°56'52" West from a Salt Lake City Monument located at the intersection of the center lines of 17th South Street and Pioneer Road, thence South 0°03'08" East 249.74 feet; thence South 89°56'52" West 246.27 feet; thence North 0°03'08" West 249.74 feet to the center line of 15th South Street extended; thence North 89°56'52" East 246.27 feet to the point of beginning, being the Northeast 1/4 of the Northwest 1/4 of Section 16, Range 1 South and 1 West, totaling approximately 1.41 acres

## ANDREWS AVENUE PROPERTIES

### DEED

#### DESCRIPTION:

BEGINNING AT A POINT ON THE NORTH RIGHT OF WAY LINE OF ANDREW AVENUE, SAID POINT BEING SOUTH 89°56'52" WEST 519.27 FEET AND SOUTH 00°03'08" EAST 353.89 FEET FROM THE SALT LAKE CITY MONUMENT IN THE INTERSECTION OF 1500 SOUTH STREET AND PIONEER ROAD, SAID MONUMENT FURTHER DESCRIBED IN THE SUMNER MARGETTS SURVEY AS EAST 19.442 FEET AND NORTH 0°03'08" WEST 4,354.879 FEET FROM THE SOUTH QUARTER CORNER OF SECTION 16, TOWNSHIP 1 SOUTH, RANGE 1 WEST, SALT LAKE BASE AND MERIDIAN; THENCE NORTH 89°56'52" EAST ALONG SAID NORTH RIGHT OF WAY LINE 494.27 FEET TO THE WEST RIGHT OF WAY LINE OF PIONEER ROAD; THENCE NORTH 0°03'08" WEST ALONG SAID WEST LINE 102.83 FEET TO A POINT NORTH 0°03'08" WEST 1,428.89 FEET AND SOUTH 89°56'52" WEST 25.00 FEET FROM THE SALT LAKE CITY MONUMENT IN THE INTERSECTION OF 1700 SOUTH STREET AND PIONEER ROAD; THENCE SOUTH 89°56'52" WEST 246.27 FEET; THENCE SOUTH 0°03'08" EAST 1.34 FEET TO A POINT 9.00 FEET NORTH OF THE CENTERLINE OF A RAILROAD TRACK; THENCE SOUTH 89°32'20" WEST ALONG A LINE PARALLEL TO AND 9.0 FEET NORTH OF THE CENTERLINE OF RAILROAD TRACKS 248.00 FEET; THENCE SOUTH 0°03'08" EAST 99.72 FEET TO THE POINT OF BEGINNING.

#### PARCEL "A" - AS

##### SURVEYED

BEGINNING AT A POINT 9.0 FEET NORTH OF THE CENTERLINE OF A RAILROAD TRACK, SAID POINT BEING SOUTH 89°56'52" WEST 519.27 FEET AND SOUTH 00°03'08" EAST 253.60 FEET FROM THE SALT LAKE CITY MONUMENT IN THE INTERSECTION OF 1500 SOUTH STREET AND PIONEER ROAD, SAID MONUMENT ALSO BEING SOUTH 00°36'28" EAST 365.53 FEET; AND SOUTH 00°03'08" EAST 576.84 FROM THE NORTH QUARTER CORNER OF SECTION 16, TOWNSHIP 1 SOUTH, RANGE 1 WEST, SALT LAKE BASE AND MERIDIAN, AND RUNNING THENCE NORTH 89°32'20" EAST ALONG A LINE PARALLEL TO & 9.0 FEET NORTH OF SAID CENTERLINE OF RAILROAD TRACKS 248.00 FEET; THENCE NORTH 00°03'08" WEST 1.34 FEET; THENCE NORTH 89°56'52" EAST 246.27 FEET TO A POINT ON THE WEST RIGHT-OF-WAY LINE OF PIONEER ROAD; THENCE ALONG SAID WEST LINE SOUTH 00°03'08" EAST 19.17 FEET; THENCE SOUTH 89°56'52" WEST 494.26 FEET; THENCE NORTH 00°03'08" WEST 16.06 FEET TO THE POINT OF BEGINNING.

CONTAINS: 0.20 ACRES

#### PARCEL "B" - AS SURVEYED

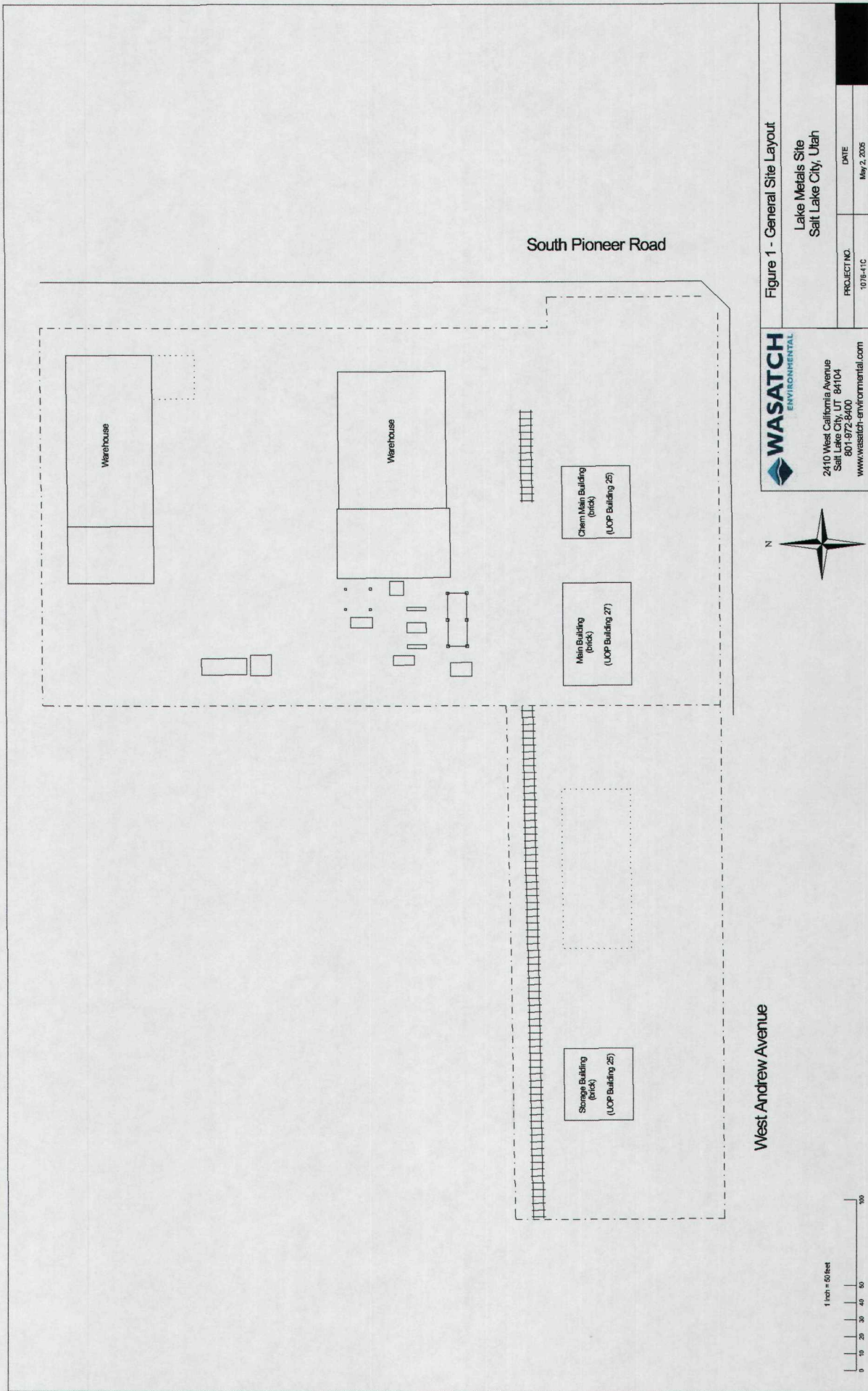
BEGINNING AT A POINT ON THE NORTH RIGHT-OF-WAY LINE OF ANDREW AVENUE, SAID POINT BEING SOUTH 89°56'52" WEST 519.27 FEET AND SOUTH 00°03'08" EAST 353.32 FEET FROM THE SALT LAKE CITY MONUMENT IN THE INTERSECTION OF 1500 SOUTH STREET AND PIONEER ROAD, SAID MONUMENT ALSO BEING SOUTH 00°36'28" EAST 365.53 FEET; AND SOUTH 00°03'08" EAST 576.84 FROM THE NORTH QUARTER CORNER OF SECTION 16, TOWNSHIP 1 SOUTH, RANGE 1 WEST, SALT LAKE BASE AND MERIDIAN, AND RUNNING THENCE NORTH 00°03'08" WEST 83.66 FEET; THENCE NORTH 89°56'52" EAST 494.26 FEET TO A POINT ON THE WEST RIGHT-OF-WAY LINE OF PIONEER ROAD; THENCE ALONG SAID WEST LINE SOUTH 00°03'08" EAST 53.68 FEET; THENCE SOUTH 41°17'35" WEST 39.93 FEET TO A POINT ON SAID NORTH LINE OF ANDREW AVENUE; THENCE ALONG SAID NORTH LINE SOUTH 89°56'52" WEST 467.89 FEET TO THE POINT OF BEGINNING.

CONTAINS: 0.94 ACRES

TABLE 1  
Lake Metals Site- Analytes of Concern  
Concentrations and Standards

		GROUNDWATER					SOIL							
Compound	CAS RN	Lake Metals Maximum Concentration - Groundwater	Source	EPA Groundwater MCL	UOP 3 X Background (AAR Report)	Utah Groundwater Standards	Lake Metals Maximum Concentration - Soil (Surface 0-12 inches)	Source	Lake Metals Maximum Concentration - Soil (Subsurface: up to 18 inches)	Source	EPA-IX PRG for Industrial Soil	UOP 3 x Background Soil Surface (AAR Report)	UOP 3 x Background Soil Subsurface (AAR Report)	Region VI Medium- Specific Screening Levels (2004-2005) Industrial Outdoor Worker
METALS														
Arsenic	7440-38-2	0.781	A	0.01	0.39	0.05	185	A	675	A	16	32.4	84.3	280 (non-cancer) 1.8 (cancer endpoint)
Lead	7439-92-1	0.36	A	0.015	0.0141	0.015	5,600	M	2,900	A	800	149.1	82.2	800
Mercury	7439-97-6	0.000032	A	0.002		0.002	28.5	A	78	A	310			340
ORGANICS														
PESTICIDES/PCBs														
Aroclor-1254	11097-69-1			0.5		3	16	A	370*	A	0.74	0.138		0.83
Aroclor-1260	11096-82-5					3	5.3	A	8.9	A	0.74			0.83
PERCHLORATE														
Perchlorate	14797-73-0						0.0178	A	0.0239	A	100			110





West Andrew Avenue

South Pioneer Road



2410 West California Avenue  
Salt Lake City, UT 84104  
801.872.3400  
www.wasatch-environmental.com

Figure 1 - General Site Layout

Lake Metals Site  
Salt Lake City, Utah

PROJECT NO.	DATE
1078-41C	May 2, 2005



